its equation is of the first degree," the pupil is required to give the converse of certain other statements, such as "If my straw hat is ruined a horse has stepped on it."

In Chapter 10 simultaneous linear equations are solved by elimination and by combination.

In Chapter 11 simultaneous equations, including quadratics, are solved by the method of substitution, and also graphically by the intersection of their loci.

Chapter 12 consists of 30 pages of supplementary problems for review.

As a brief summary of the treatment, it may be said that formal definitions are reduced to a minimum, and every effort is made to appeal to the common sense of the pupil. The text is so arranged as to give the pupil a clear idea of the meaning and purpose of algebra and geometry, rather than to set forth a logical and conventional system of mathematical doctrine. This is primarily the ideal to be attained in the coordination of elementary mathematics, and as this idea seems to have been clearly the guiding principle in the selection and arrangement of material in this case, it is interesting to note the vitality and unity it gives to the text. Such a one volume text necessarily covers a limited field, but within its limits it is, with a few exceptions, thoroughly modern in its spirit and aims, as well as eminently teachable.

S. E. SLOCUM.

Second-Year Mathematics for Secondary Schools. 2d edition. By E. R. BRESLICH. University of Chicago Press, 1916.

THIS book is one of the numerous recent attempts to correlate elementary algebra, geometry, and trigonometry for purposes of instruction. The idea of correlation is of course one of great possibilities, but to be successfully realized it must be based on some central and unifying principle, such, for instance, as the function concept advocated by Klein. A careful examination of the present work fails to reveal any such principle of selection or arrangement, and leaves the impression of a haphazard collection of unrelated topics.

In order that the book may be judged on its own merits and not by the opinion of the reviewer, the following brief summary of its contents is given.

Chapter 1 is a tabular statement of the geometric theorems

and constructions included in the preceding volume on first year mathematics.

Chapter 2 is a brief explanation of logical statement, fallacies, and methods of proof, which could hardly be appreciated by pupils at this point, before having had sufficient practice to distinguish between the methods described and the difficulties involved.

Chapter 3 relates to algebra, including simultaneous linear equations, elimination by combination and by substitution, and by the intersection of the graphs of their loci. This arrangement is meritorious, but the treatment is entirely too brief and is accompanied by very few problems.

Chapter 4 takes up geometry, beginning with the properties of quadrilaterals and parallelograms. This is interrupted by four quadratic equations to be solved algebraically, followed by three problems on loci, a page and a half on prisms and a page and a half on dihedral angles. This chapter shows plainly the lack of coordination which characterizes the book.

Chapter 5 treats of proportional line segments, supplemented by properties of transversals intercepted by a system of parallel planes, and includes photographs of two railway bridges.

Chapter 6 begins with the theory of proportion, is interrupted by three pages on the factoring of polynomials, returns to proportion, and ends by showing the relation of direct and inverse variation to proportion.

Chapter 7 treats of similar plane figures, but digresses to explain the graphical method for finding mechanically the quotient of two arithmetical numbers. The objection to such an irrelevant digression is that it violates the principle of correlation which aims at concentrating the pupils' thought instead of diverting it.

Chapter 8 starts out by defining the projection of one line on another, then proceeds to the simplification of radicals, passing next to a discussion of the theorem of Pythagoras with historical notes and a picture of Fermat. The formula for the solution of quadratic equations is then given, and the chapter concludes by generalizing the theorem of Pythagoras. How this arrangement facilitates instruction is not fully apparent.

Chapter 9 is mainly on trigonometry. The sine, cosine and tangent are defined, and brief tables of these functions given, with applications to the solution of plane triangles,

followed by the derivation of two trigonometric identities, after which comes the algebraic and graphical solutions of a quadratic with a linear equation.

Chapter 10 relates to theorems on the circle, with historical notes and a photograph of Dryburgh Abbey.

Chapters 11 and 12 are on geometry, discussing the measurement of angles by circular arcs, and proportional line segments in circles.

Chapter 13 is on algebra and considers fractional equations including trigonometric identities.

Chapter 14 swings back to geometry, taking up geometric inequalities mainly applied to line segments.

Chapter 15 begins with dihedral angles and concludes with certain theorems on the sphere, enlivened by a photograph of the cathedral of S. Maria del Fiore.

Chapter 16 treats of geometric loci, including among other things definitions of the circumcenter, incenter, excenter, orthocenter, the nine point circle and the Eulerian line.

Chapter 17 is on the relation of a circle to its inscribed and circumscribed circles, and includes the determination of the value of π. This is illustrated by a photograph of Gauss, with historical notes, and photos of two ancient German buildings.

Chapter 18 begins with a few theorems on plane areas, passing from this to the solution of literal equations in one and two unknowns, then back again to the discussion of certain theorems on areas of triangles, and ending with the factoring of polynomials.

Chapter 19 concludes the work with a discussion of areas of polygons, illustrated with photographs of two peculiar buildings, which are not named but apparently represent what is called the Chicago style of architecture.

The modern demand for economy of time in education will eventually lead to correlation of mathematics in which the central idea will be to cultivate in the pupil the habit of mathematical thought and exact expression, to give him equal facility in the application of algebraic and geometric methods, and to make the subject matter vital by modern applications and interpretation. The outline given above seems to indicate that the opportunity to accomplish these results has been almost entirely overlooked in the present work, as the arrangement has no advantage over similar material selected at random from standard texts. S. E. SLOCUM.